

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of: : Confirmation No.: 7191  
:   
David B. JACKSON : Attorney Ref.: 010-0011A-US  
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Serial No.: 10/530,582 : Art Unit: 2195  
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Filed: August 11, 2006 : Examiner: Douglas J. Bryant  
:   
FOR: SYSTEM AND METHOD OF CO-ALLOCATING A RESERVATION SPANNING  
DIFFERENT COMPUTE RESOURCES TYPES

**AMENDMENT UNDER RULE 1.312**

03/30/2011  
OK TO ENTER: /J.T./  
**MAIL STOP: ISSUE FEE**  
**Commissioner for Patents**  
**P.O. Box 1450**  
**Alexandria, VA 22313-1450**

Dear Sir:

Prior to paying the Issue Fee, kindly enter the following amendment and remarks.

**Amendments to the Claims** begin on page 2 of this paper.

**Remarks** begin on page 13 of this paper.

## AMENDMENT

This listing of claims will replace all prior versions, and listings, of claims in the application:

### Listing of Claims:

1. (Currently Amended) A method of co-allocating resources within a compute environment, the method comprising:

receiving a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

analyzing first constraints and service level agreement guarantees associated with the first request, the first constraints and guarantees related to use of the ~~plurality of networked computing devices within the compute environment~~;

identifying a first group of resources that meet the first request;

receiving a second request for a reservation for a second type of resource in the compute environment;

analyzing second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within the compute environment~~, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing devices has a one or more servers each having a homogeneous processor architecture;

identifying a second group of resources that meet the second request; and

generating a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames

in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

2. (Currently Amended) The method of claim 1, further comprising reserving resources according to the ~~generated~~ co-allocation map.

3. (Original) The method of claim 1, wherein generating the co-allocation map comprises identifying a reduced map of quantities of resources that can simultaneously satisfy the first request and the second request.

4. (Canceled)

5. (Currently Amended) The method of claim 1, wherein the first and second types of resources comprise at least one of: compute resources, disk storage resources, network bandwidth resources, memory resources, and licensing resources.

6. (Currently Amended) The method of claim 1, wherein generating the co-allocation map further comprises identifying an intersection of ~~[[the]]~~ an availability of each of the first type of resource and the second type of resource.

7. (Canceled)

8. (Currently Amended) The method of claim ~~[[7]]~~ 1, further comprising:  
generating a resulting array of events describing the intersecting time frames.

9. (Original) The method of claim 8, wherein the resulting array of events comprises at least one of resource quantity, resource quality, time frames, quality of information and cost.

10. (Currently Amended) The method of claim 1, wherein the first request and the second request comprise at least one of: a job description, at least one time frame availability, a description of minimum resources, a description of resource types and attributes, and a reservation duration minimum.

11. (Original) The method of claim 1, wherein identifying the first group of resources and the second group of resources further comprises analyzing events associated with the first request and the second request and how resource availability changes over time.

12. (Currently Amended) The method of claim 11, wherein the events comprise at least one of job start, job completion, state change, boundaries, reservations, and policy enforcement limits.

13. (Original) The method of claim 1, further comprising reporting at least one of the following parameters associated with the identified first and second group of resources: cost, quality of information data, resource quantity data, time frame data, and resource quality data.

14. (Original) The method of claim 1, further comprising:

performing again, under constraints identified by the co-allocation map, the step of identifying a first group of resources that meet the request for the first type of resource.

15. (Canceled)

16. (Original) The method of claim 1, wherein:

receiving a request for a reservation for a first type of resource further comprises receiving a request for the first type of resource for a first time frame, and wherein the identifying and analyzing steps for the first type of resource take into account the first time frame;

receiving a request for a reservation for a second type of resource further comprises receiving a request for the second type of resource for a second time frame, wherein the identifying and analyzing steps for the second type of resource take into account the second time frame; and

generating the co-allocation map between the first group of resources and the second group of resources further comprises calculating an intersection of the first time frame and the second time frame.

17. (Currently Amended) The method of claim 1, wherein constraints of the first ~~and~~ constraints, the second constraints and the service level agreement guarantees are at least one of resource matching in terms of type, attribute or quantity.

18. (Currently Amended) The method of claim 1, wherein the first ~~and~~ constraints, the second constraints and the service level agreement guarantees associated with the first request and the second request relate to resource-based policies.

19. (Currently Amended) The method of claim 1, wherein the first ~~and~~ constraints, the second constraints and the service level agreement guarantees associated with the first request and the second request relate to time-based policies.

20. (Original) The method of claim 19, wherein the time-based policies limit requestors to a pre-determined quantity of resources at any given moment in time.

21. (Original) The method of claim 1, wherein receiving a request for a reservation for a first type of resource further comprises receiving a request for a reservation for the first type of resource having an attribute.

22. (Original) The method of claim 21, wherein the attribute is at least one of disk storage space, memory, license scope, network bandwidth capability, clock speed and central processing power.

23. (Original) The method of claim 1, wherein the co-allocation map is computed as one of an intersection, a union or a distinct response.

24. (Original) The method of claim 23, further comprising, before reserving compute resources, presenting to a requestor of a reservation of the first and second type of resources an analysis of the compute resources and a possible reservation.

25. (Currently Amended) The method of claim 24, wherein the presented analysis relates to a quantity and quality of the compute resources in relation to ~~[[the]]~~ a request for a reservation for resources.

26. (Original) The method of claim 25, further comprising:

receiving from the requestor of a reservation a revised request for resources based on the presented analysis.

27. (Currently Amended) The method of claim 23, wherein a requestor may select that generating the co-allocation map returns an analysis according to at least one of the ~~interaction~~ intersection, union or distinct response.

28. (Currently Amended) The method of claim 27, wherein the analysis returned to the requestor, according to at least one of the ~~interaction~~ intersection, union or distinct response, corresponds to an analysis of the quantity of resources and a degree of fulfillment of the first request and the second request according to available resources.

29. (Currently Amended) The method of claim 28, wherein the analysis returned to the requestor further comprises a list of resources that can fulfill the first request and the second request ~~of the requestor~~.

30. (Original) The method of claim 28, wherein the analysis returned to the requestor further comprises a transaction ID associated with the analysis.

31. (Currently Amended) The method of claim 30, further comprising presenting to the requestor an option to submit the first request and the second request with reference to the transaction ID.

32. (Currently Amended) A method of claim 1, wherein the ~~generated~~ co-allocation map represents a set of resources associated with at least one of the first request or the second request.

33. (Currently Amended) The method of claim 32, wherein the first request specifies exclusivity of ~~[[the]]~~ a set of reasons for the first request.

34. - 35. (Cancelled)

36. (Currently Amended) A system for co-allocating resources within a compute environment, the system comprising:

a processor;

means that controls the processor to receive a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

means that controls the processor to analyze first constraints and same level agreement guarantees associated with the first request, the first constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment;

means that controls the processor to identify a first group of resources that meet the request for the first type of resource;



means that controls the processor to receive a second request for a reservation for a second type of resource in the compute environment, ~~wherein the first type of resource and second type of resource span one or more servers each having a homogeneous processor architecture;~~

means that controls the processor to analyze second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of the plurality of networked computing devices within the compute environment, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing device has a homogeneous processor architecture;

means that controls the processor to identify a second group of resources that meet the request for the second type of resource; and

means that controls the processor to generate a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

37. (Currently Amended) The system of claim 36, further comprising means that controls the processor to reserve resources according to the ~~calculated~~ co-allocation map.

38. (Currently Amended) A system for co-allocating resources within a compute environment, the system comprising:

a processor;

a first module controlling the processor to receive a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

a second module controlling the processor to analyze first constraints and service level agreement guarantees associated with the first request, the first constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within the~~ compute environment;

a third module controlling the processor to identify a first group of resources that meet the request for the first type of resource;

a fourth module controlling the processor to receive a second request for a reservation for a second type of resource in the compute environment, ~~wherein the first type of resource and second type of resource span one or more servers each having a homogeneous processor architecture;~~

a fifth module controlling the processor to analyze second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within the compute environment, wherein the first type of resource and second type of resource span at least one computing device of the plurality of networked computing devices, wherein each computing device of the plurality of networked computing device has a homogeneous processor architecture;~~

a sixth module controlling the processor to identify a second group of resources that meet the request for the second type of resource; and

a seventh module controlling the processor to generate a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

39. (Currently Amended) The system of claim 38, further comprising a module controlling the processor to reserve resources according to the ~~calculated~~ co-allocation map.

40. (Currently Amended) A non-transitory computer-readable medium storing instructions for controlling a computing device to co-allocate resources within a compute environment, the instructions causing the computing device to perform steps comprising:

receiving a first request for a reservation for a first type of resource in a compute environment comprising a plurality of networked computing devices;

analyzing first constraints and service level agreement guarantees associated with the first request, the first constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment;

identifying a first group of resources that meet the request for the first type of resource;

receiving a second request for a reservation for a second type of resource in the compute environment, ~~wherein the first type of resource and second type of resource span one or more servers each having a homogeneous processor architecture;~~

analyzing second constraints and service level agreement guarantees associated with the second request, the second constraints and service level agreement guarantees related to use of ~~the plurality of networked computing devices within~~ the compute environment, wherein the first

type of resource and second type of resource span at least one computing device of the plurality of computing devices, wherein each computing device of the at least one computing device has a homogeneous processor architecture;

identifying a second group of resources that meet the request for the second type of resource; and

generating a co-allocation map between the first group of resources and the second group of resources, wherein the co-allocation map comprises at least one of (1) intersecting time frames in which both the first request and the second request may be simultaneously satisfied, and (2) all time frames where available resources exist that satisfy the first request and the second request.

41. (Currently Amended) The non-transitory computer-readable medium of claim 40, wherein the instructions further comprise reserving resources according to the ~~calculated~~ co-allocation map.

42. – 49.(Canceled)

**REMARKS**

This amendment replaces the Examiner's amendment. Assignee desires that the Examiner's amendment duplicated the subject matter in claims 13 and 14 on page 6 of the Notice of Allowance. To clarify the issue, Assignee requests, in place of Examiner's amendment, the entry of the above amendment. All the other changes in the Examiner's amendment are copied above. Therefore, this amendment should be entered under Rule 312.

**CONCLUSION**

Having addressed all rejections and objections, Applicant respectfully submits that the subject application is in condition for allowance and a Notice to that effect is earnestly solicited. If necessary, the Commissioner for Patents is authorized to charge or credit the **Novak, Druce & Quigg, LLP, Account No. 14-1437** for any deficiency or overpayment.

Respectfully submitted,

Date: March 28, 2011

By:  \_\_\_\_\_

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